

Designing for knowledge worker retention & organization performance

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Abstract

This paper illuminates significant relationships between three major knowledge management (KM) design dimensions and the perceived ability of 150 organizations to retain their knowledge workers. Knowledge worker retention is a critical challenge for today's organizations as they face increasing global competition with its demands for even more such workers, while dramatically shifting workforce demographics hasten their exit. KM design initiatives that accelerate knowledge creation, acquisition, and particularly knowledge capture, sharing and retention, are receiving unprecedented levels of investment as a result. While many factors impact organization financial performance, this research indicates that successful knowledge worker retention is significantly related with higher reported financial performance. The implications of these results are noted.



Introduction

Knowledge is always embodied in a person; carried by a person; created, augmented, or improved by a person; applied by a person; taught and passed on by a person; used or misused by a person. The shift to the knowledge society therefore puts the person in the center. (Drucker, 2001, p.287).

Retaining employees whose knowledge has high competitive value is becoming a critical and well-recognized challenge (DeLong, 2004; Frank, Finnegan, & Taylor, 2004; Jamrog, 2004; Ready & Conger, 2008; Somaya & Williamson, 2008). Such employees are known as knowledge workers in that they “have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution or application of knowledge” (Davenport 2005, p.10).

The retention challenge is the result of increasing job mobility in the global knowledge economy where workers average six employers over the course of a career (O’Neal, 2005), coupled with the baby boomer retirement “brain drain” and a smaller generation of workers entering their prime working age during this time (Jamrog, 2004). It is occurring in all types of organizations across all management levels. This study empirically investigates whether the impact of an organization’s strategic orientation toward knowledge management, the learning culture it supports, and specific human resource practices impact knowledge worker retention and organization performance.

This study is important because the costs from general employee turnover are significant, ranging from 100% to 150% of a person’s base salary, including separation costs, replacement costs associated with hiring and training, and lost productivity costs (Bliss, 2001). In addition to short-run financial costs, Lee and Strong (2004) describe four types of knowledge -- knowing what, knowing-how, knowing-why, and knowing-who -- that can impact long-term competitive performance when lost. Knowledge workers capture and apply tacit knowledge, a key to building sustainable competitive advantage (Lubit, 2001; Nahapiet & Ghoshal, 1998; Nissen 2005; Teece, 1998). The Drucker quote reminds us that knowledge workers literally own the means of production and carry knowledge, information, and “know-how” skills in their heads (Lagace, 2007).

The social network consequences of their loss are also becoming recognized as key “central connectors,” “brokers,” and “peripheral players” disappear during downsizings and outsourcing exercises (Parise, Cross & Davenport, 2006). Social networks take time to re-emerge and support knowledge sharing (Coleman, 1988). There are also difficult to document costs associated with the loss of critical tacit knowledge held in key individuals because such knowledge is less likely to be mentioned and transferred, and thus can be lost forever (Mohamed, Mynors, Grantham, Walsh, & Chan, 2006). Typical losses occur when talented researchers move to other companies or leave to start their own businesses. When those start-ups become sizable competitors, the costs of that lost knowledge are potentially devastating.

Whether knowledge worker loss actually impacts overall financial performance has, however, been more difficult to empirically confirm (Delery, 1998; Glebbeek & Bax, 2004). Turnover can have negative effects on firm performance depending on many factors that vary according to type of firm and circumstances. For example, Shaw, Gupta, and Delery (2005) found a negative relationship in one study between voluntary turnover and organization performance which was attenuated as voluntary turnover increased. In other words, the effects

of turnover on performance are very strong when turnover is low but weaken as turnover becomes very high and the organization is in continual workforce replacement mode (Shaw, Gupta, & Delery, 2005). Similarly, employee turnover in a major retail chain was associated with poorer customer service and decreased profit margins (Zeynep & Huckman, 2008). Cascio (2006) also reported that a 10% improvement in retention at SYSCO resulted in more than \$70 million of savings per year. This study attempts to identify whether a relationship does exist between retention and overall financial performance.

KM Phases and Knowledge Loss

Exhibit 1 notes each phase of the knowledge management process, beginning with the internal creation and external acquisition of knowledge, its explicit expression, capturing and sharing, and its application in creating new or improved products and services which build performance.

-- Insert Exhibit 1 Here --

Knowledge loss can occur within each process phase. Potentially valuable research knowledge may never be successfully linked to market opportunities when an internal R&D process is flawed. A poorly managed acquisition integration can result in key talent leaving and their knowledge not acquired. When an organization's culture and HR practices reward competitive individual behavior, key knowledge workers such as senior consultants may simply elect to not share their expertise. And, finally, whenever market research fails to accurately collaborate and learn from customers and vendors, the wrong knowledge can be applied to products and services which fail to deliver expected performance (Hoopes & Postrel, 1999). A clear knowledge management goal must therefore be to minimize such knowledge losses when and wherever they occur. However, the failure to retain knowledge workers who exit an organization is a major form of loss that is growing in significance for the reasons previously noted.

Designing for Knowledge Management

Since market demand can certainly drive knowledge worker movement, organizations are feeling an urgent need to preserve as much tacit knowledge as possible while they have them (Cappelli, 2000; Droege & Hoobler, 2003). AMR Research, for example, reported that organizations were expected to spend over \$73 billion in 2007 on knowledge gathering, capturing, and sharing technologies such as portals and platforms, with spending growing nearly 16% in 2008 (McGreevy, 2007).

While some of this sizable investment may help, spending on such technologies alone will ultimately not suffice. Organization design initiatives that explicitly target KM knowledge loss goals can be introduced to impact the psychological, emotional and behavioral processes involved in the stay or leave decision and build a culture of retention and engagement (Holtom, Mitchell, & Lee, 2006; Jamrog, 2004). The ability to execute KM design strategies to promote knowledge worker engagement and retention is becoming a critical organization competency (McCann & Buckner, 2004; Mohrman, Finegold, & Klein, 2002; Nadler & Tushman, 1997).

Specifically, knowledge worker retention is best promoted when: (a) the organization's leadership recognizes and expressly values the strategic importance of knowledge management, (b) when it cultivates an active learning culture, and (c) when its HR programs and practices support KM processes. Organizations that learn how to design and execute strategies that do these three things will also be more likely to perform better (McCann & Buckner, 2004; Ho, 2008).

Strategic Knowledge Orientation

An organization's knowledge strategy is "the overall approach an organization intends to take to align its knowledge resources and capabilities to the intellectual requirements of its strategy" (Zack, 1999, p. 135). Leaders are seen as the best weapon in retaining valued talent (Jamrog, 2004; Taylor, 2004). This includes leadership and performance management systems that clearly establish the importance of knowledge to its operations (Casselman & Samson, 2007; McCann & Buckner, 2004). Accordingly, responsibility and accountability for retaining talent needs to shift from HR and out to the front lines into the hands of leaders, especially immediate supervisors. Knowledge worker retention is enhanced when they see that their top leaders understand, value, and support the development and active management of their intellectual capital through structures, processes, and systems (Edvinsson & Malone, 1997; Sakiya, 1982; Stewart, 1998).

Learning Culture Orientation

Organizational culture is also a deciding factor in employee retention. Brockbank (1999) notes that strategically proactive HR units create corporate cultures that support innovation and creativity. A culture that values interpersonal relationships and collaboration, a team orientation, and respect for people has been shown to result in longer tenure (Sheridan, 1992). Other retention drivers include a sense of connection between an employee's job and organization strategy and the organization's success, a reputation of integrity, and a culture of innovation (Corporate Leadership Council, 2004).

The literature on knowledge workers and the creation of a learning organization culture is largely anecdotal but extensive (Davenport & Prusak, 1998; DeGeus, 1997; Edvinsson & Malone, 1997; Garvin, 1993; Nonaka & Takeuchi, 1996; Stewart, 1998). In every instance, the presence of supportive values and beliefs that encourage employee inquisitiveness and creativity, a willingness to learn from error, and openness to sharing knowledge are viewed as significant contributors to a learning organization culture (Lee-Kelley, Blackman, & Hurst, 2007). Finally, knowledge work requires collaboration, flows of information and support from colleagues in different parts of the organization (Lagace, 2007). As Droege and Hoobler (2003, p. 56) suggest, "When the right people come together, the odds of diffusing tacit knowledge to others are increased." Creating a culture that encourages collaboration and open access to information is a consistent theme in all of these company studies.

HR Practices

Companies have generally adopted two types of responses to combat employee turnover: proactive defensive measures that make the work environment more appealing, including

increases in salaries and benefits, recognition programs, employee training, team initiatives, improving internal communications, etc., and reactive retaliatory approaches that increase the costs associated with leaving, including aggressive enforcement of non-compete clauses, threat of litigation, etc. (Somaya & Williamson, 2008; Wagar & Rondeau, 2006).

Recent studies have shown that the most popular practices are not always the most effective and that there are distinct bundles of HR practices for effectively managing knowledge workers (Horwitz, Heng, & Quazi, 2003; McCann & Buckner, 2004; Zack, 2003). For example, some researchers suggest that traditional programs, which rely more on compensation, miss the mark (Frank, Finnegan, & Taylor, 2004).

There is, however, broad agreement that a work environment that allows people to grow and develop is critical for retention (Benson, 2006; Jamrog, 2004). According to Frank (2004, p.11), “employee retention and employee engagement are joined at the hip.” Increasing employee engagement reduces an employee’s probability of departure and increases retention (Corporate Leadership Council, 2004). Engagement is supported by several practices, such as the concept of “total rewards” as a means of retaining valuable employees, embracing everything that employees value in the employment relationship (O’Neal, 2005; Rumpel & Medcof, 2006). For example, Edvinsson and Camp (2005) describe characteristics of an intelligent remuneration system that reinforces organizational learning and renewal. Smith and Rupp (2002) also identified several engagement and retention factors, including the organization’s willingness to meet personal and family concerns, providing job recognition and career advancement opportunities, an attractive salary, and career and intellectual challenges. Garber (2003) similarly found access to personal growth and career opportunities to be unique engagement determinants for a high potential group. Sutherland (2004), on the other hand, found that job satisfaction and organizational commitment did not predict knowledge worker employment duration, but other important factors did include high autonomy, career development opportunities, performance-related rewards, and challenging work assignments.

Our Research Design & Model

In summary, discussion of the literature leads to the research model shown in Exhibit 2. The following sections discuss how the model was designed and tested.

-- Insert Exhibit 2 Here --

Sample and Data

Data had been collected via a questionnaire at a conference attended by more than 500 senior HR professionals and via a subsequent mailing to those same attendees (McCann & Buckner, 2004). The survey instrument consisted of six demographic and 28 knowledge-management related items gathered from an extensive review of the knowledge management literature. The survey was pre-tested with several corporate level HR professionals in six different organizations, and 222 of the 235 surveys initially returned were classified as usable. Respondents came from a wide range of industries largely in the United States, Canada, and Europe. Additional cases were excluded if they had “don’t know” answers and/or extensive missing values, and respondents who were line managers, consultants, or some other non-specified position. The effective sample of 150 respondents therefore represents well-informed

senior-level professionals who have direct knowledge about major retention and knowledge management initiatives and their organizations' performance. Exhibit 3 summarizes the demographic characteristics of this sample.

-- Insert Exhibit 3 Here --

Measures

Strategic knowledge orientation, learning culture, and human resource practices were assessed with 18 Likert-scale items ranging from 1 "don't agree at all" to 5 "completely agree." A factor analysis was conducted with SPSS 15.0 using the principal components extraction method and Varimax rotation, which produced a three-component solution. Following Stevens' (1992) recommendations, two items below the .60 level were eliminated. Rerunning the factor analysis with the remaining 16 items resulted in the three-factor structure shown in Exhibit 4, which also presents the means and standard deviations for each item. The three factors explain 63.97% of the total variance in the original variables, with Factor 1 accounting for 49.61% of the total variance, Factor 2 for 7.92%, and Factor 3 for 6.44%. Items within each construct display desirable convergent validity (loading high on that construct) and discriminant validity (low cross-loadings). Bartlett's sphericity test (1382.288, $df=120$, $Sig.=.000$) and the Kaiser-Meyer-Olin measure of sampling adequacy ($KMO = .924$) indicate that the factor analysis was appropriate (Hair, Anderson, Tatham, & Black, 1998; Mertler & Vannatta, 2002). Cronbach's alpha was computed to assess the internal reliability for each factor. Exhibit 4 shows that all constructs have values greater than the minimum of .70 required for reliability (Hair, Anderson, Tatham, & Black, 1998).

-- Insert Exhibit 4 Here --

Knowledge worker retention was assessed with the Likert-scale item "*We do a good job of retaining key knowledge creators, workers, and teachers*" (where 1 = "don't agree at all", 5 = "completely agree."). Financial performance was assessed with a comparative and internally reflective measure similar to Darroch (2005). Specifically, respondents were asked to rate their relative financial performance as "at a historical high," "better than the previous year," "same as last year," or "worse than last year." Surveys using comparable measures have indicated acceptable reliability when an identical self-reported measure was objectively validated for a sub-sample of survey respondents (McCann, Selsky, & Lee, 2007). Exhibit 5 presents the means, standard deviations, and correlations of all of the study variables. The one-way ANOVA results in Exhibit 5 show that the study variables did not differ significantly between organizations of different size.

-- Insert Exhibit 5 Here --

Path Analysis Results

Path analysis using AMOS 7 was conducted to test the model. Measures of fit indicate that the model is an adequate representation of the set of causal relationships in the proposed model shown in Exhibit 2. The chi-square of 2.961 with 3 degrees of freedom is not significant

with $p = .398$ exceeding the minimum levels of .1 or .2 (Hair, Anderson, Tatham, and Black, 1998). The RMSEA value of .000 is below the .05 threshold for a good fitting model (Maruyama, 1997). The NFI of .990 and TLI of 1.001 exceed the .90 threshold (Hair, Anderson, Tatham, & Black, 1998).

After removing the non-significant path between strategic knowledge orientation and knowledge worker retention, the revised model shown in Exhibit 6 fits well (Chi-square = 4.633, 4 degrees of freedom, $p = .324$; RMSEA = .033; NFI = .985; TLI = .991). Exhibit 6 shows the standardized regression coefficients next to the arrows and squared multiple correlations R^2 (explained variance) in italics above the variables. The model explains about 54% of the variance in Learning Culture, 40% of the variance in Human Resources Practices, 45% of the variance in Knowledge Worker Retention, and 8% of the variance in Financial Performance.

-- Insert Exhibit 6 Here --

Exhibit 7 further shows details regarding the relationship between perceived success in knowledge worker retention and financial performance. The data overall show that perceived success in knowledge worker retention are highest for organizations that are at a historic high point financially and lowest for those that did worse than the previous year. Perceptions of senior HR executives regarding successful knowledge worker retention are, however, significantly higher overall than those of corporate/division staff, perhaps due to the HR executives' better access to data than non-HR staff.

-- Insert Exhibit 7 Here --

Discussion & Implications

Our study provides clear and substantial support for the value of designing and deploying several KM strategies and practices within the three areas or factors identified: strategic knowledge orientation, learning culture orientation, and HR practices. Perceived successful retention of knowledge workers and financial performance are significantly related with these specific sets of strategies and practices. It is not believed that these strategies and practices are sufficient in themselves to drive retention and performance; the results are significant, but limited. While the sample is composed of uniquely positioned and experienced senior HR professionals, the perceptual basis for their responses always dictates caution. Other strategies and practices certainly exist within the literature and in practice. Here, several specific strategies and practices are identified that in this study are strongly related to each other and are also associated with critical organization outcomes.

The results are important for several reasons. First, and most obviously, knowledge worker retention can be improved and their loss is not inevitable. Some organizations believe that they do a better job at this than other organizations. This study identifies the specific KM design strategies and practices associated with those that believe they are doing better.

While very expensive and difficult to deploy investments in KM technologies such as portals, document management systems, and platforms can help capture and share knowledge, there are many more less costly and easier to deploy strategies and tactics such as those identified in this study and described in Exhibit 4. For example, making sure that training and development goals are better tied to key knowledge gaps means that knowledge workers are

being provided with relevant and useful knowledge that helps them meet real performance challenges. They are more likely to stay in an organization that is doing so. Or promoting the role of managers as teachers and mentors through incentives, along with providing the time to play those roles, can prove satisfying and supports their sense of professional accomplishment, a positive retention factor identified in previously noted studies.

Second, by implication it is clear that a great variety of initiatives are required. Some require hardware, software, and technical specialists while others are definitely people-based and supported through human resource practices and “softer” interventions. None are necessarily easy to design and implement, and all require thoughtful planning and integration to assure that they work together to produce desired results. Importantly, organization size was not a significant factor in the relationships discovered. Smaller as well as larger organizations can be successful in managing knowledge and successfully retaining knowledge workers, so the size of resources invested in these initiatives is potentially not the deciding factor.

Third, the study establishes the pattern of relationships among the three sets of strategies and tactics. Recognition and embracement of knowledge management by top leaders’ as a source of strategic competitive advantage is essential and the foundation for a learning culture and specific HR practices. The path model indicates that the relationships flow from Strategic KM Orientation to the other two dimensions. Context counts, in this sense, i.e., there is a well-defined role for the organization’s leadership in setting the context for knowledge management which supports knowledge worker engagement and retention. Cultivation of a learning culture and support for KM-based HR practices cannot occur without such recognition and advocacy.

Finally, the quality and quantity of research now taking place regarding knowledge management are impressive. This field has extensively developed over the past decade, judging from the variety of academic and professional journals on the subject. However, there are huge gaps in the literature on topics such as knowledge worker retention. It appears that HR professionals have also not kept as current with the field as necessary. If the talent wars predicted as a result of the “brain drain” and “boomer” exit are to be fought and won by an organization, it will be essential for HR professionals to actively engage this literature and support the types of practical research necessary to fill these gaps. A knowledge society and an organization dependent on the creation and application of knowledge can do no less.

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Exhibit 1. KM Processes & Design Dimensions

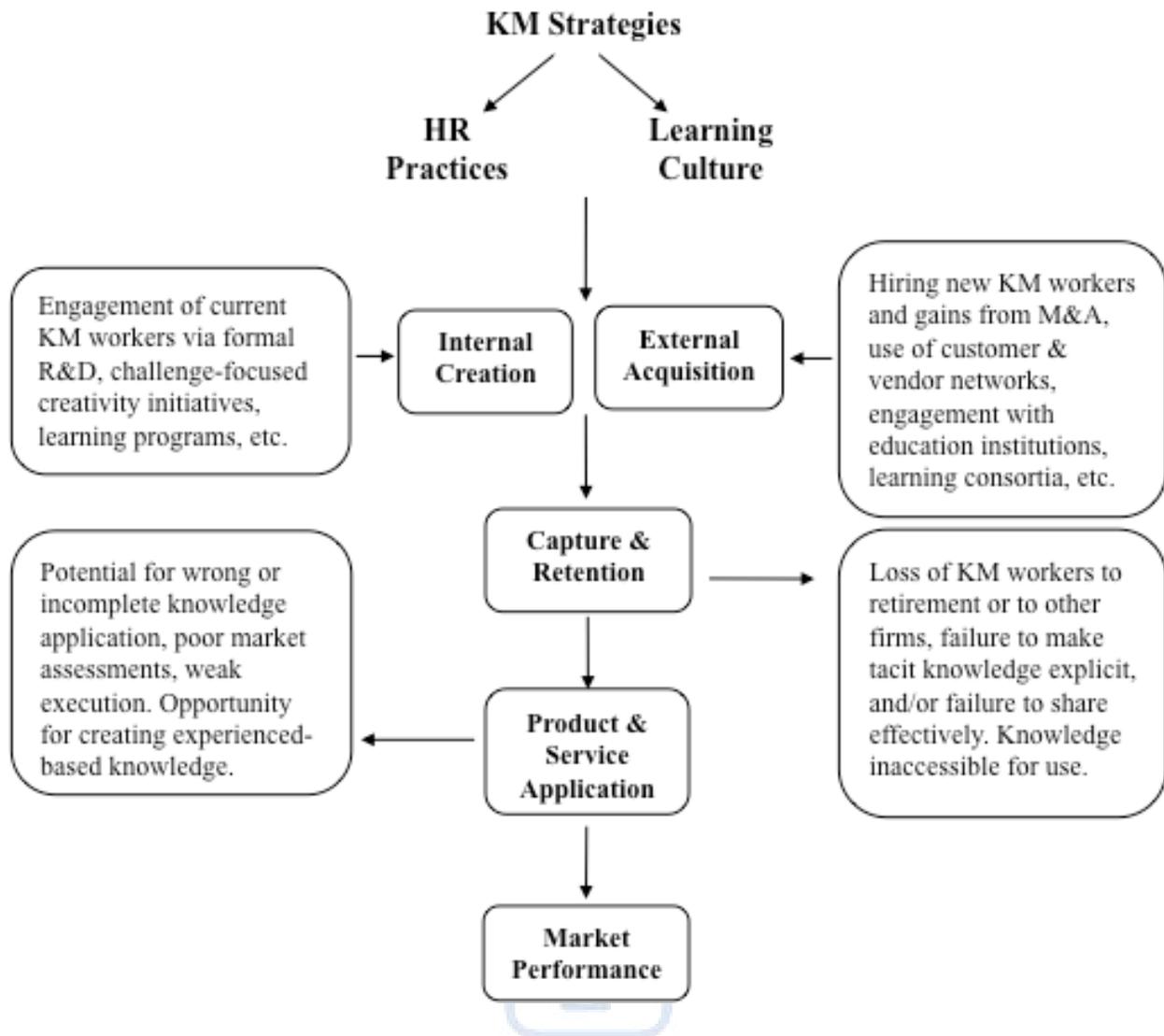


Exhibit 2. Proposed Research Model

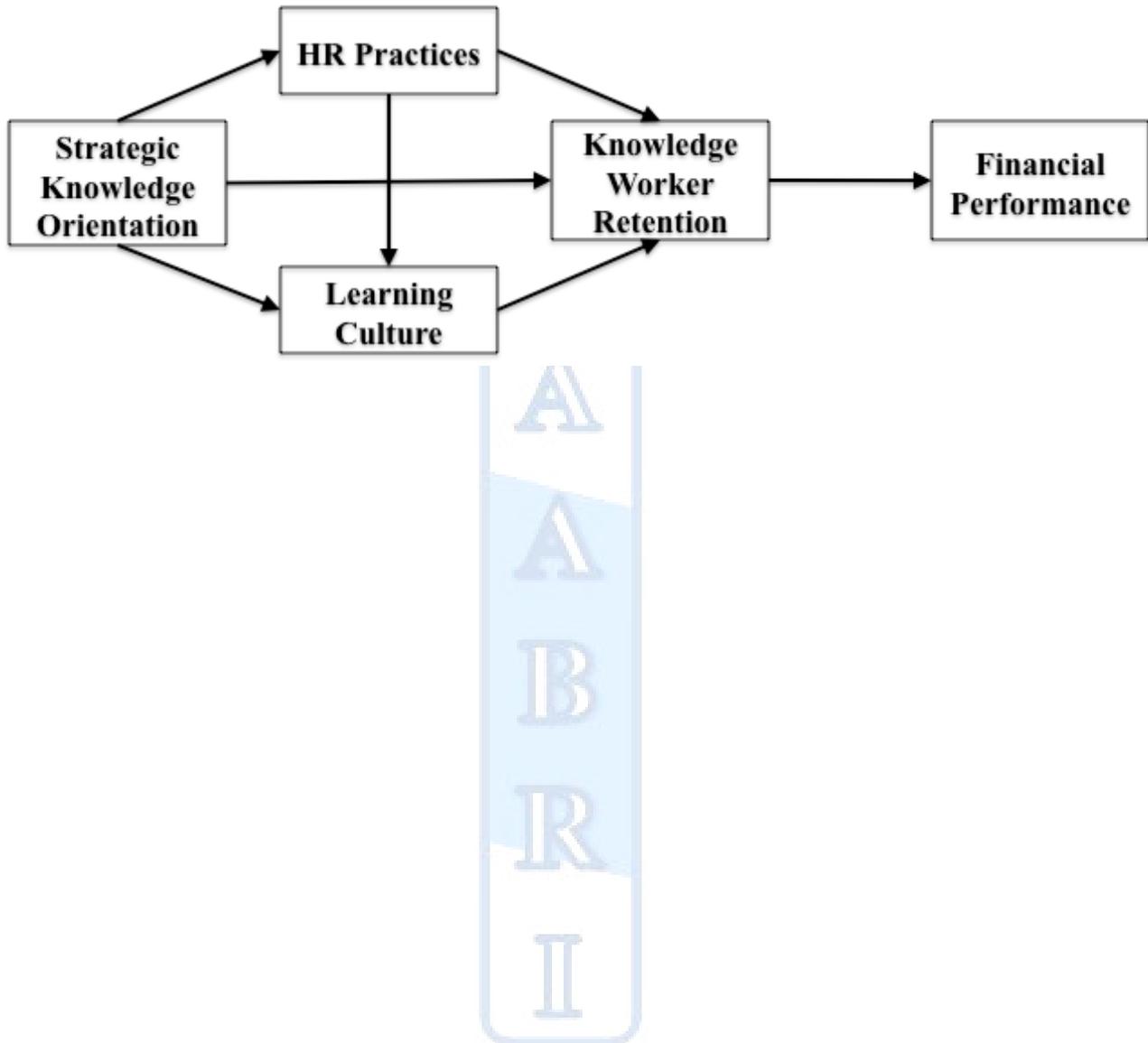


Exhibit 3. Sample Demographics (N=150)

	Frequency	Percent
Present Position		
Senior HR executive	98	65.3
Corporate /division staff	52	34.7
Industry		
Financial services	31	20.7
Electronics & info. Services	23	15.3
Mfg./aerospace/auto	18	12.2
Healthcare	14	9.5
Consumer products	14	9.3
Chemicals/petroleum	14	9.3
Professional & engineering services	10	6.8
Government/other	7	4.7
Travel/transport	6	4.1
Utilities	5	3.3
Retailing	5	3.3
Present financial performance		
At a historical high	68	45.3
Better than previous year	39	26.0
Same as last year	25	16.7
Worse than last year	18	12.0
Organization size		
Under 100 employees	3	2.0
100 to 1,000	22	14.7
1,001 to 5,000	44	29.3
5,001 to 10,000	24	16.0
10,001 to 40,000	34	22.7
Over 40,000	21	14.0
Nationality of parent organization		
USA	115	77.7
Canadian	18	12.0
European	10	6.7
Japanese	2	1.4
Mexican/Latin American	1	.7
Africa/S. Africa	1	.7
Other	1	.7

Exhibit 4. Item Statistics and Factor Loadings

Items	Mean	SD	Factor Loadings		
			1	2	3
Strategic Knowledge Orientation (Cronbach's alpha = .905)					
• We have incorporated strategies regarding IC into strategic thinking and planning.	2.70	1.11	.784		
• Our top leadership supports and engages in an active dialogue about knowledge management.	2.80	1.19	.762		
• We have adopted explicit measures for assessing and reporting on various forms of IC.	2.12	1.09	.759		
• We have clearly defined strategies for building IC that have adequate resources and budgets.	2.29	1.04	.719		
• Our organization design is specifically evaluated in terms of how well it supports IC application.	1.93	0.96	.706		
• IC is a competitive asset that the organization actively try to manage.	2.97	1.15	.704		
• We've developed special roles for helping direct and apply IC (e.g., "knowledge managers").	1.99	1.01	.610		
Learning Culture (Cronbach's alpha = .866)					
• We are good at learning from both successes and mistakes.	2.86	0.96		.807	
• Our culture supports the sharing learning with each other.	2.97	1.05		.749	
• We support open, ready access by employees to the knowledge created in the organization	2.90	1.07		.675	
• Our leadership empowers employees to apply their knowledge to innovative ends.	3.07	1.03		.667	
• Managers view themselves as active learners and teachers.	2.47	0.97		.636	
HR Practices (Cronbach's alpha = .766)					
• Our career planning/development efforts specifically include knowledge acquisition goals.	2.64	1.09			.751
• The performance appraisal system has clear goals regarding a manager's role in managing IC.	2.11	1.14			.702
• The HR group plays a key role in the organization's thinking and strategies for building IC.	3.22	1.24			.685
• Our training and development efforts are closely tied to specific knowledge gaps and needs.	3.18	0.99			.619

Note: IC refers to intellectual capital that is the focus of knowledge management efforts.

Exhibit 5. Statistics for Path Model Variables

Variables	Mean	SD	ANOVA ^c		Correlations					
			F	Sig.	1	2	3	4	5	
1. Strategic Knowledge Orientation	2.39	.86	1.40	.226	1					
2. Learning Culture	2.85	.82	1.47	.202	.697**	1				
3. HR Practices	2.78	.86	.58	.709	.632**	.629**	1			
4. Knowledge Worker Retention ^a	2.93	1.02	.70	.619	.564**	.655**	.600**	1		
5. Financial Performance ^b	3.05	1.05	.99	.426	.203*	.176*	.264*	.291*	1	

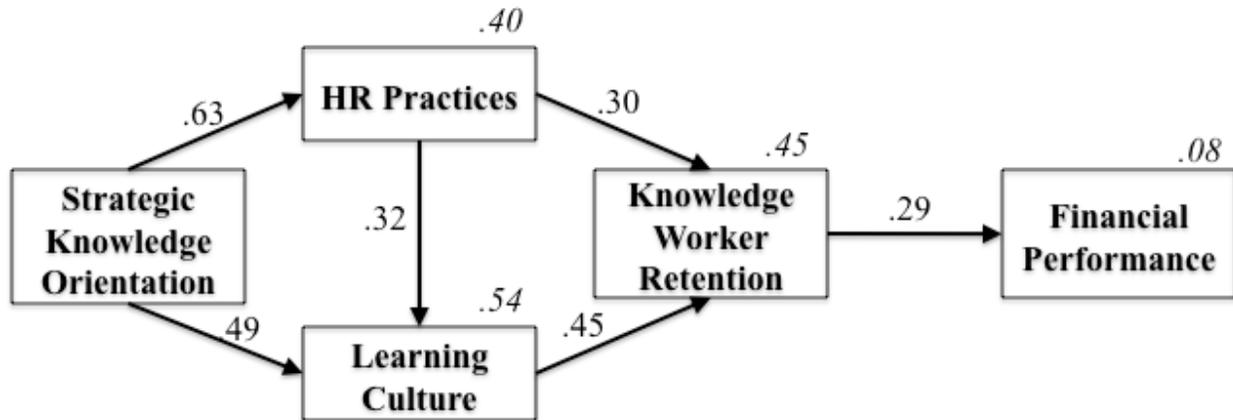
Note: ^a The organization is doing a good job of retaining the knowledge creators, workers, and teachers.

^b4= at a historical high point; 3 = better than previous year; 2 = same as last year; 1 = worse than last year

^cOne-way ANOVA results for the impact of organizational size

* Correlation is significant at the 0.05 level (2-tailed), ** correlation is significant at the 0.01 level (2-tailed)

Exhibit 6. Path Diagram Standardized Path Coefficients and Squared Multiple Correlations



Note: The relationship between Strategic Knowledge Orientation and Knowledge Worker Retention was not significant and was removed from the model. Squared multiple correlations are noted in italics above the variables.



Exhibit 7. Knowledge Worker Retention Means and Financial Performance

Financial Performance Categories	Knowledge Worker Retention Perception					
	Overall		Senior HR Executives		Corporate/ Division Staff	
	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>
At A Historical High Point	68	3.20	52	3.17	16	3.31
Better Than Previous Year	39	2.84	22	3.04	17	2.58
Same As Last Year	25	2.68	16	2.87	9	2.33
Worse Than Last Year	18	2.33	8	2.75	10	2.00
Total	<i>150</i>	<i>2.92</i>	<i>98</i>	<i>3.06</i>	<i>52</i>	<i>2.65</i>

